

Hydroacoustic signal record analysis for the search of seismic emission radiation foregoing a bottom earthquake and tsunami occurrence in the Pacific

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Abstract. It is well known that the natural seismic noise pulses in the form of the acoustic signals with the frequency 0.01–1 kHz may forego large earthquake occurrence. The study of these signals over the range of 30–40 Hz was began with L.N. Rykunov (1980, 1983) and then has been extended on Kamchatka Peninsula by V.A. Saltykov (1997). The records of the similar signals over the frequency band up to 1 kHz were received by A.S. Beljakov and A.V. Nikolaev (1991, 1995) by using the bore hole gauge. In the case of an oceanic earthquake, an acoustic and seismic emission radiation from the crust quake source must generate an acoustic signal in a water layer where this signal may propagate far because of a weak attenuation of the signal in the incompressible water. Now we have achieved the possibility of analyzing the observation data from the long-term records of a high-quality hydroacoustic receiving array. This array is situated at the Kamchatka shelf of the Pacific Ocean and was formerly used for the International Program of World Ocean temperature monitoring (Program ATOC). The array records contain a number of signals radiated from the zones of a bottom earthquake preparation. Data processing of these records by using special software opens the possibility of receiving new information about the peculiarities of preparation of a bottom earthquake that may be used effectively for the earthquake prediction advance as well as for the tsunami warning system.

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